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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,677	07/18/2003	Stephen Allen Johnson	3971-13-CON	3654

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EXAMINER

RINEHART, KENNETH

ART UNIT PAPER NUMBER

3749

DATE MAILED: 12/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/622,677

Applicant(s)

JOHNSON ET AL.

Examiner

Kenneth B. Rinehart

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 24-26, 33-36 and 44-142 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-26, 33-36 and 44-142 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 10/31/06 have been fully considered but they are not persuasive. The applicant has attempted to overcome the 35 USC 112 rejection of claims 52, 59, 73, 80, 95, 102, 117, and 124 by adding the terms reducing the particle size of and particle size reduction. The examiner does not see in the disclosure any mention of a device for inherently reducing the particle size. The drawings do not reveal such a device. The applicant fails to make reference in the specification to "Another possible solution is to grind the coal going into the cyclone furnace much finer and supply additional air to increase the percentage of combustion that occurs for coal particles in flight. This option requires expensive modifications or replacement of grinding equipment and is counter to the original design and intent of the cyclone furnace." which would tend to suggest that at the time of filing the specification the invention did not include such a device. Regarding the other arguments the applicant has not shown where in the originally filed specification the terms indicated in the 35 USC 112 rejection are either not found in the specification. Per the previous responses the examiner has indicated why persons of skill would not recognize in the disclosure a description of the invention defined by the claims. As stated before there is no discussion of the fusion temperature characteristics or the attributes of ash fusion temperature characteristics (cone, specific height, etc.) Moreover, the affidavits were not prepared by disinterested third parties, but by interested parties. Regarding the "at least one carbon compound", while many items and materials may possess carbon, there is no mention in the specification of this limitation to allow one of ordinary skill to recognize that this is part of the invention.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 24-26, 33-36, 44-67, 73, 78, 79, 80, 81, 87, 88, 89, 95, 100, 101, 102, 109, 110, 122-124, 131, 132, 140-142 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 24, 87, 109, 131, 140-142 refer to the ash slag has at least one ash fusion temperature characteristic selected from the group consisting of initial deformation temperature, softening temperature, hemispherical temperature, and fluid temperature less than the same ash fusion temperature characteristic of the ash slag or a second ash slag produced from combustion of the solid fuel alone which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation "the ash slag has at least one ash fusion temperature characteristic selected from the group consisting of initial deformation temperature, softening temperature, hemispherical temperature, and fluid temperature less than the same ash fusion temperature characteristic of the

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ash slag or a second ash slag produced from combustion of the solid fuel alone” in the application as filed. Claims 57, 58, 78, 79, 100, 101, 122, 123 refer to at least one carbon compound which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation “at least one carbon compound” in the application as filed. Claims 52, 59, 73, 80, 95, 102, 124 refers to a reducing the particle size, particle size reduction device which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation “reducing the particle size, particle size reduction device” in the application as filed. Claims 66, 88, 110, 132 refers to ash fusion temperature is less than 2600 which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation “ash fusion temperature is less than 2600 ” in the application as filed. Claims 66, 88, 132 refer to initial deformation temperature, softening temperature, hemispherical temperature, and fluid temperature less than 2600 degrees which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not pointed out

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where the amended claim is supported, nor does there appear to be a written description of the claim limitation “to initial deformation temperature, softening temperature, hemispherical temperature, and fluid temperature less than 2600 degrees ” in the application as filed. Claim 33, 68, 90, and 112 refer to the iron containing material fluxes the ash slag to produce a ash slag which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation “the iron containing material fluxes the ash slag to produce a ash slag” in the application as filed. Claims 36, 66, 88, and 132 refer to melting point of the second ash slag is less than 2600 degrees F which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation “melting point of the second ash slag is less than 2600 degrees F” in the application as filed. Claim 45 refers to the at least one ash fusion temperature characteristic is fluid temperature which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation “the at least one ash fusion temperature characteristic is fluid temperature” in the application as filed.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 68, 69, 71-74, 77-81, 84, 85, 90, 91, 93, 94, 95, 96, 99, 100, 102, 103, 106, 107, 112, 113, 115, 116, 117, 118, 121, 122, 124, 125, 128, 129, 134, 137, 69, 70, 75, 76, 82-83, 85-86, 89, 92, 97-98, 101, 104-105, 108, 111, 114, 119-120, 123, 126, 127, 130, 133, 135-136, 138, 139 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hepworth (4572085) in view of Kober et al (4498402). Hepworth discloses the boiler and iron containing material and at least partially combusting the ash slag (fig. 1, col. 3, line 12), iron bearing material fluxes ash slag having a melting temperature less than the melting temperature of the ash slag produced from the combustion of the solid fuel alone, viscosity, melting at least a portion of the coal-containing fuel to produce an ash slag, wherein, in the melting step, at least a portion of the iron-containing additive fluxes the ash slag to produce a slag layer having a melting point less than a melting point of an slag layer without the iron-containing additive (This inherently occurs. In chemistry it is elementary that the use of the same reactants under the same conditions in the same reactor will produce the same results.) cyclone boiler (fig. 1), composite ash slag has a viscosity (fig. 1) particle size reduction (inherent), magnetite (col. 4, line 59) one carbon compound (col. 3, line 12), a particle size reduction (inherently the fuel comes from a pulveriser), a burner (fig. 1), a

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fuel transfer system (fig. 1), combustion chamber (fig. 1), introducing the iron containing material (fig. 1), a fuel storage bunker (col. 3, line 8), the iron bearing material is added to the solid fuel (col. 3, lines 10-15), sub bituminous (col. 1, line 52). Hepworth discloses applicant's invention substantially as claimed with the exception of low sulfur, the coal has a total content of less than about 10 wt % (dry basis of ash) and wherein the coal has a calcium content of at least about 15 wt % (dry basis of ash), wherein the low sulfur coal has a total sulfur content of less than about 1.5 % wt (dry basis of coal), P90 size of about 300 microns, dust form blast furnace gas cleaning equipment, ferrous oxide and ferric oxide ferrous sulfide, ferric sulfide, and combinations thereof, introducing at least one carbon compound along with the iron bearing material, hydrocarbon, oil and grease Xanthum gum, iron bearing material is introduced into the boiler an amount ranging form 10lb/ton of solid fuel to about 20 lb/ton, 50 lb/ton of solid fuel, 15 weight percent, the at least one ash fusion temperature characteristic is less than 2600 F, less than 1.5 wt %, 33.5 % and 66.5 %. Kober et al teaches low sulphur (col. 2, line 10) to meet environmental requirements. It would have been obvious to one of ordinary skill in the art to modify Hepworth by including low sulphur as taught by Kober for the purpose of meeting environmental requirements. Hepworth in view of Kober discloses applicant's invention substantially as claimed with the exception of P90 size of about 300 microns, dust form blast furnace gas cleaning equipment, ferrous oxide and ferric oxide ferrous sulfide, ferric sulfide, and combinations thereof, introducing at least one carbon compound along with the iron bearing material, hydrocarbon, oil and grease Xanthum gum, iron bearing material is introduced into the boiler an amount ranging form 10lb/ton of solid fuel to about 20 lb/ton, 50 lb/ton of solid fuel, 15 weight percent, the at least one ash fusion temperature characteristic is less than 2600 F, less than



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1.5 wt %, 33.5 % and 66.5 %. It would have been obvious to one of ordinary skill in the art at the time the invention was made to P90 size of about 300 microns iron bearing material is introduced into the boiler an amount ranging from 10lb/ton of solid fuel to about 20 lb/ton of solid fuel, 50 lb/ton, 15 weight percent, the at least one ash fusion temperature characteristic is less than 2600 F, less than 1.5 wt %, 33.5 % and 66.5 % since it has been held that the where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges or values involves only routine skill in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have another type of iron bearing material or ferrous oxide and ferric oxide and ferric oxide ferrous sulfide, ferric sulfide, and combinations thereof, the at least one carbon compound being of a specific type of one or more of a hydrocarbon, oil, grease, and xanthum gum, because applicant has not disclosed that the type of iron bearing material, type of carbon provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either the type of material of Hepworth or the claimed type because both materials perform the same function equally well.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth B. Rinehart whose telephone number is 571-272-4881. The examiner can normally be reached on 7:20 -4:20.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Josiah Cocks can be reached on 571-272-4874. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

kbr

  
KENNETH RINEHART  
PRIMARY EXAMINER